

SYSTEMIC STRESS: THE ARMY LIFESTYLE THROUGH THE
SOCIAL READJUSTMENT SCALE LENS

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General Studies

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

SYSTEMIC STRESS: THE ARMY LIFESTYLE THROUGH THE SOCIAL READJUSTMENT SCALE LENS, by Thad Krasnesky, 81 pages.

The Army lifestyle is often viewed as inherently stressful. The result of that stress is, at times, approached with reactionary measures instead of a proactive stance. This may be due to the inability of commanders to metrically evaluate their soldiers' conditions. This study utilizes the Holmes and Rahe Social Readjustment Scale to provide that metric. Additionally, it serves as a basis for following studies to determine how that metric can be incorporated into units reporting and readiness.

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Of necessity, I must thank my fellow soldiers. It is the soldier that drives my desire to search for ways to make a difference in their lives. If my efforts can help alleviate even the smallest amount of stress from their already stressful lives, it will be time well spent.

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ACRONYMS

APA	American Psychological Association
AR	Army Regulation
CBO	Congressional Budget Office
CCC	Captains Career Course
CDC	Center for Disease Control
CSF	Comprehensive Soldier Fitness
DFAS	Defense Finance and Accounting Service
DSM	Diagnostic and Statistic Manual of Mental Disorders
FM	Field Manual
GAT	Global Assessment Tool
HRC	Human Resources Command
NIMH	National Institute of Mental Health
OBC	Officer Basic Course
OCS	Officer Candidate School
PCS	Permanent Change of Station
PERI	Psychiatric Epidemiology Research Interview Life Events Scale
PSS	Perceived Stress Scale
PTSD	Post Traumatic Stress Disorder
ROTC	Reserve Officer Training Corps
SRE	Schedule of Recent Experiences
USMA	United States Military Academy
VA	Department of Veterans Affairs
XO	Executive Officer

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CHAPTER 1

INTRODUCTION

We will do what is necessary, because this is about taking care of our most precious asset, and that is our people.

— General Lloyd Austin, Vice Chief of Staff of the Army,
Fort Riley, Kansas, 27 July 2012

Visit any base in the Army, any unit in the Army, and ask a commander what his equipment readiness status is. That commander will likely be able to place his hands on multiple forms of digital displays and printed charts and graphs that list exactly how many vehicles, weapons, and widgets his unit is authorized and how many he currently has on hand. Additional charts and reports will tell him how many hours have been logged on each system, how much maintenance has been conducted, and how many faults or defects each piece of equipment has. The sum of these reports lets him know within a narrow margin of error, how much of his equipment is available for mission and what the operational readiness of each available piece is.

Personnel records will provide a similar picture. The commander will be able to show what his authorized personnel strength is as well as what personnel he currently has assigned. Leave and pass requests, school dates, and medical records will allow him to further refine his personnel picture by telling him how many of his personnel are present and what their degree of readiness is on any given day.

A commander's understanding of his unit's readiness is a key element to his ability to plan and conduct operations. It is important for the commander to know not only what his readiness is today but also what his readiness will likely be at any given time in the next six to twelve months. Much effort is put forth by unit plans and training

sections to give the commander some degree of predictive ability with regards to readiness.

One of the issues that is currently affecting unit readiness is the problem of stress. Combat stress, or Post Traumatic Stress Disorder (PTSD) in its more extreme form, is reported to affect 44 percent of veterans seeking care at Department of Veterans Affairs facilities (VA) and as much as one third of current, active-duty soldiers (McMichael 2009; Wulfsson 2012). With such a pervasive problem, would it not be beneficial if a commander were able to predict his soldier's emotional and stress related readiness as easily as range records are used to monitor weapons qualification readiness?

Primary Research Question

The primary question that we will address in this thesis is this. Does the Army lifestyle generate stressors that can be accurately measured and predicted?

Problem Statement

The Army is an inherently stressful organization. Its members live with the perpetual possibility that their choice of occupation may put them in a situation where their lives will be at risk. They might even be called upon to end another person's life. Particularly in the current environment, the potential for one of those two outcomes is less a possibility and more a likelihood. Even when not placed in this emotionally threatening position, the job of the organization is to train for that mortal possibility.

With equipment, we utilize scales and schedules to track operating hours on generators, mileage on vehicles, and rounds fired on weapons. These tools allow us to provide some degree of predictability with regards to replacement and refurbishment

needs. If we can utilize some similar tool to provide the same level of predictability with people, we owe it to the soldiers and the country we serve. The defense of the nation is the ultimate goal of those in the Army. The survival of the country itself has at times been placed upon the shoulders of those men and women in uniform. It is incumbent then that we ensure that those entrusted with such a task are operating at their peak performance potential.

Secondary Questions

Our primary research question is; does the Army lifestyle generate stressors that can be accurately measured and predicted? To answer this primary research question, it is necessary first to answer several secondary questions.

What are the common stressors that are present in soldiers' lives? We must examine those events that face soldiers and determine which of these things qualify as stressors.

The next question is, are these stressors unique to the army lifestyle? This is an important step in the process. We must determine the difference between those stressors that are part of the Army system and those that are purely incidental to the organization.

Third, do scales or tools exist that have the ability to measure or score these stressors? Identifying the stressors is not enough. We must also identify a metric with which they can be assessed.

Fourth, if we are able to identify such tools, do those tools have predictive validity? The tools can be a reliable metric but if they lack predictability they are valid as only a reporting tool. The predictability of the tool is the key to giving the commander the ability to project his readiness.

Finally, if the scales exist and are valid, what is their relevance? Do their measurements correlate to factors that impact military readiness?

Assumptions

In order to answer the questions that we have proposed, there are several assumptions that we must undertake. Perhaps the most important of these assumptions revolves around the identification and measurement of potential stressors. The ability to identify stressors is a necessity. We can list events and situations but without the ability to identify these things as stressors, it will be impossible to answer our primary research question.

We must also assume that we have the ability to not only measure these stressors but to place them in a hierarchical structure with relative values. This assumption is as vital as the ability to identify the stressor. Without this measuring ability, all we will be able to compile is a list of stressors. Without a metric that we can assign to each event, we will lack the ability to develop any type of score or cumulative measure that would indicate the impact of stress on an individual over a span of time.

The third assumption that must be made is that these stressors are relatively universal in nature. If they do not apply to a broad range of the Army population, then their relevance is lacking. Individual problems might be identified but an organizational need might be completely missed.

Definitions

There are four key terms that will be used consistently throughout this paper. Although a general understanding of these terms is assumed, an exact definition will be

given. This definition will be assumed to apply to these terms whenever they are used throughout this paper. This will help remove any ambiguity and ensure that those reviewing this study have a consensus of how these terms are intended to be used herein.

The term that we will use most frequently is the term “stressor.” The Merriam-Webster dictionary defines a stressor as “a stimulus that causes stress” (Merriam-Webster 2012). The Diagnostic and Statistical Manual of Mental Disorders IV has a very similar understanding of the term. It refers to a stressor as any event that impacts the individual (American Psychiatric Association 2000). It further reads that a stressor has the ability to impact Axis I and Axis II disorders. Since Axis I and Axis II refer to Clinical Disorders and Developmental and Personality Disorders respectively, we can infer then that a stressor has the ability to be a substantive change agent.

“Stress” is defined as “a factor that causes bodily or mental tension” by Merriam-Webster (Merriam-Webster 2012). Again, the DSM IV refers to stress as a state of heightened stimulation (American Psychiatric Association 2000). There are distinctions made between positive and negative stressors but both positive and negative events are assumed to be equally capable of creating stress.

For the purpose of this particular study then, we will utilize both of these authoritative sources and define a stressor as this; “any event that causes an increased level of tension or stimulation.” This definition will be applied equally to those events that are popularly perceived as either positive or negative. The only qualification for an event to be considered a stressor is that element of increased tension or stimulation.

The second term that we will define is validity. This is a standard definition utilized in statistics. When we refer to validity in these studies, we are specifically addressing whether the study is actually measuring what it purports to measure.

The next term is reliability. Again, we will use the standard definition used in statistical analyses. Reliable means that the same test or scale can be used multiple times and be expected to achieve similar results.

The final term that must be clearly defined in this paper is the term “Army.” This is a specifically doctrinal term. Although many civilians often understand the word “army” to refer generically to all armed forces of the country, we only use that term to refer to those members of the armed forces that are part of the branch of service that is called the Army. This term leads directly to the next topic; the scope of the study.

Scope

We are restricting the study of this issue specifically to those members of the armed forces that are a part of the Army. Although it is our intent to be as inclusive as possible when it comes to this population, we do not intend to look outside that particular organization to sister services in the military or to civilian organizations. Although we may refer to these additional agencies as references or use them for anecdotal examples, they will not comprise the bulk of our study. The results of this study will not be intended to be applicable outside of that scope.

There certainly will be opportunities for additional research outside these boundaries. In fact, we anticipate that there will be several suggestions for further topics of study that come out of this research. This thesis itself, however, will confine itself to the stated boundaries. There may be inferences that are drawn to areas of study outside of

this scope but these should be viewed as generalities that cannot be directly applied without further study.

Limitations

One key limitation that we will face in this study is that there is a distinct difference between the Army lifestyle as required by regulation and law and the Army lifestyle as it is presumed to be by culture. In the first instance, we will be able to refer to source books that outline specific guidelines for what a soldier is supposed to do or refrain from doing.

In the second instance, there is little in the way of written documentation. Much of the military lifestyle is rooted in culture that has no written proscription. It is passed down from one generation to the next. When asked for reasons behind many practices, the answer will often be not a mandate to review a particular regulatory tome or manual but simply the reply, “It is tradition.”

To mitigate this lack of documentation, we will attempt to demonstrate a convincing body of evidence that supports by common perception the existence of this cultural influence. Anecdotal and circumstantial recounting will begin to frame the picture. Individual accounts and conversations with assignment officers, senior officers, and human resource personnel will be compared with published guidelines. The scarcity of codified strictures will not allow the picture to be as clearly defined as we might like but the image that will arise from the many individual points that will be presented will be as discernible as any Seurat painting.

Another limitation that we will face is the lack of supporting predictive data. Much of our focus will be identifying sources that have the “potential” to hold predictive

validity. There is only one study that we will present in this thesis that actually demonstrates this potential.

A final limitation that we will deal with in this thesis is matter of causality. Although we will attempt to identify a predictive tool it does not mean that we will prove a causal link. Although causality would certainly be useful however, it is not necessary for relevance. Whether the connection is one of correlation or causality, a degree of predictability is enough to provide relevance.

Delimitations

As was mentioned in the Scope section, the first and foremost delimitation that will be imposed is the confining of this study to the Army lifestyle alone. There are certainly likely to be corollaries in other services but there simply is not enough time to tackle similar issues in the Air Force, Navy, Marines, and Coast Guard. Many of the conclusions from this study will likely find relevance or at the very least similarities in other branches but the specifics will have to be left to future researchers.

An additional delimitation is that we will not be addressing combat stress directly. Our focus is on the military lifestyle. This is an important distinction. Combat is a unique situation. Although we have been at war for the last twelve years, this is not the intended norm. We will be focusing on those aspects of the military lifestyle that are consistent regardless of the combat status of the soldier.

Granted, it is unlikely that the peacetime lifestyle can be completely separated from the war time lifestyle. There will by necessity be much overlapping of the two. We also will be greatly interested in lifestyle stress as it applies to increasing the effects of combat stress but it is not the combat stress itself that we intend to study.

A delimitation regarding the scales that will be represented in the study is the focus on self report measurement tools as opposed to investigator based tools. This delimitation is not based on relevance of the two different approaches but on the likelihood of implementation. Even if investigator based tools are shown to be valid and reliable and relevant to this thesis, given the amount of time and expertise that is required to use them, it is unlikely they could ever be appropriately applied to a universal military population.

Significance of the Study

The significance of this study cannot be understated. Although there are countless studies available on the results of stress in an individual's life and nearly as many studies about the detrimental effect of stress to an organization, no study that I am aware of has ever made an attempt to identify systemic elements of the Army lifestyle that can be measured and assigned a predictive factor in regards to military readiness. If the study conducted here is able to identify a method of predictive relevance, we have the possibility of simultaneously increasing readiness while decreasing the impact on the unit and the soldier.

In 1990, the Department of Health and Human Services released a report entitled "Healthy People 2000" (National Center for Health Statistics 2001). This report was the result of an initiative launched by the Department of Health and Human Services in conjunction with the Center for Disease Control. Its goal was to identify ways to promote healthy lifestyles, discover new risk vectors, and develop prevention measures. This study came up with three conclusions that are directly relatable to our research problem. First, they concluded that in the case of half of all illnesses, stress held a causal

relationship. Second, they determined that as many as 80 percent of all doctors visits are for stress-related conditions or illnesses that were caused by stress. Third, they learned that job stress was costing the United States business sector over two hundred billion dollars a year in lost time, absenteeism, accidents, and insurance claims.

As a military organization we must then ask ourselves, is it likely that we are immune to this effect? How many work hours do we lose each week as a result of stress? How many accidents occur? How many doctor's visits are required? It is not only a good idea but it is our responsibility to examine this question. This responsibility derives not only from a good business model but from a trust that is placed in us by the soldiers that voluntarily join our organization. This responsibility is also required by us from the American public who trust us to be good stewards of their tax dollars as well as their sons and daughters.

Aside from the illness issue, the Creighton University Center for Marriage and Family published a study wherein they identified the leading causes of divorce in America (Risch, Riley, and Lawler 2003). This study was very similar in nature to the Department of Health and Human Services paper. The Creighton center identified 10 primary causes of divorce that were generally arrayed across three different areas. Over half of the causes they identified were stress related or were directly linked to the effects of stress.

Additionally, there is the issue of increased mortality risk. In a 2011 report on death statistics, the Center for Disease Control reported that the number one cause of death in America is heart disease (Center for Disease Control 2011). One of the leading factors in heart disease is stress. It leads to hypertension, high blood pressure, and an

overtaxed heart (Kulkarni et al. 1998). Additionally, stress can lead to unhealthy life decisions such as overeating and a sedentary lifestyle, which further increases the risk of heart disease and death.

More graphically, and perhaps more directly, the National Institute of Mental Health has issued a report stating that suicide is the tenth leading cause of death in the United States (National Institute for Mental Health 2007). Of those people who commit suicide, 90 percent of them are suffering from a mental illness at the time of their death. The DSM IV TR lists stressors as a major contributor to diagnoses of mental illness (American Psychiatric Association 2000).

The effect does not stop at just the object of the stress however. Many theories contend that stress often manifests itself in physical violence. An article from the Journal of Health and Social Behavior supports the idea that even if stress does not directly cause violent outbursts, the violent event would not have occurred without the individual reaching a stress threshold (Umberson, Williams, and Anderson 2002).

Finally, there has been much supposition that stress serves a role in the heinous events that are commonly referred to as spree killings. This theory has been advanced in both civilian settings, such as the Columbine shooting, and the military venue, as in the case of Staff Sergeant Robert Scales (Schmitt and Yardley 2012). Although this is only anecdotal supposition, there are many who believe that the circumstantial evidence supporting this belief is solid. Perhaps stress is not the causal event but even if it is only a contributing factor, it is not something that we can take lightly.

Taken in its entirety then, this topic has a broad and grave impact on the soldier, the soldier's family, the unit, and it would not be overstating the case to say the nation

itself. The answer to the question of whether or not we have the ability to accurately identify and measure stressors and predict their impact on readiness may be the first step in enacting measures to reduce or mitigate those stressors affects.

A Twenty Ton Load on a Ten Ton Bridge

Every bridge in the country that is part of the state or federal highway system has a weight limit assigned to it. Engineers develop the designs for these bridges. They test models and materials to determine whether or not the bridges that they are designing are capable of meeting the needs of the traffic that will cross it. Stress tests and stringent math give them a maximum load that each bridge can carry. The maximum weight for each bridge is then posted along the highway so that all those driving that stretch of road know exactly what the bridge is capable of bearing.

Passenger car drivers rarely ever need to pay attention to these signs. The weight of the family car is not something that is ever likely to put a bridge at risk of collapse. Truck drivers on the other hand, have a deeply intimate concern with the numbers that are posted on those signs. Those signs have the potential to be life or death to them.

The truck driver knows how much his truck weighs. He knows how much his cargo weighs. He knows how much fuel he is carrying in his tanks and how much that weighs. He stops at weigh stations along the route to verify that the combined weight of his truck and cargo are what he believes it to be. He plans his route so that he only has to cross bridges that are rated as being capable of carrying the weight he is hauling.

Even with all of this careful preparation, when that truck driver gets close to a bridge he looks for the sign that lets him know what the weight rating is for the bridge. Mistakes happen. It is possible that he took the wrong path or his information listed a

bridge incorrectly. If he is hauling twenty tons of cargo and he comes across a bridge whose warning sign says that it is only rated to hold ten tons, that driver will stop. He will reassess his situation and take appropriate actions to avoid loss of property or life.

What if the sign were missing? What if someone forgot to put the sign up? Or perhaps the sign was placed properly but it was knocked down by a storm? What then? The driver of the twenty ton truck would have nothing to guide his actions. He would continue on down the road, thinking himself safe. He would drive out onto the bridge and it would collapse underneath him. It might kill him. If there were other people on the bridge when it collapsed it might kill those innocent people too even though they were not over the weight limit. They just happened to be in the wrong place at the wrong time.

It all comes down to the sign. If the sign is there. If he sees the sign. If the sign is accurate. If he believes the sign.

What a tool such a sign would be for a commander! If a scale existed that allowed a commander to measure his unit and determine the degree to which it was impacted by stress or going to be impacted by stress. If he were able to have the means to assign a metric to his unit that let him know the degree to which his readiness would be affected. If he had a reliable result that informed him, "This much stress, but no more." That is what we will attempt to find. Perhaps if we can identify a way to create these signs, we can save an overweight convoy of stress from heading towards an underweight bridge.

CHAPTER 2

LITERATURE REVIEW

Introduction

How clear are the signs then? How well are they painted? How clearly displayed are they? And how accurate are their estimates? Can we really accept their numbers? Is the bridge they indicate really a ten ton bridge or can we safely drive a twenty ton truck across it. This is what a review of the literature should tell us.

In our literature review, we will examine four different areas. The first group we will review will focus on identifying scales that purport to measure stress. The second group will be geared towards identifying those scales that have demonstrated predictive ability. The third group will focus on literature that addresses the potential outcomes or risks associated with different levels of stress. Finally, we will examine literature that challenges the premises and conclusions that we may have arrived at in the first three sections of the review.

Scalability

Initially we will discuss four psychological theories or scales of stress measurement that support the idea that high levels of stress are linked to increased risk in other areas. These measures are the Social Readjustment Scale (commonly called the Holmes and Rahe Scale), the Psychiatric Epidemiology Research Interview Life Events Scale, or PERI as it is more widely known, the Perceived Stress Scale (PSS), and the Global Assessment Tool (GAT).

Each of these four tools has been used to measure degrees of stress experienced by an individual. The particular metric for each varies. Combined however, they will each demonstrate that the ability to place a score or number or value to a level of stress has validity.

Predictability

As each scale varies in its style of measurement, so each one too, varies in its approach to predictability. Two of the scales, the GAT and the PSS, focus primarily on reporting. The other two, the Holmes and Rahe Scale and the PERI, place an increased emphasis on predictability. A greater body of work exists on the Holmes and Rahe scale. It is this scale that we will utilize for most of our attempts to demonstrate predictive validity.

Relevance

Finally, we will look at literature from both the psychological spectrum as well as the medical field. We will be able to utilize a large and mutually supporting body of literature that demonstrates the downside to stress. We will clearly illustrate with this examination what risks to both the organization and the individual exist when predictive measures are not sought or are ignored when available.

Scalability

Schedule of Recent Experiences and the Social Readjustment Scale (Holmes and Rahe)

In the mid-1950s, Thomas Holmes began work on what he hoped would be a comprehensive stress scale. His goal was to create a diagnostic tool that would allow him

to assign a metric to an individual's level of stress. What he came up with was the Schedule of Recent Experiences (SRE) (Holmes and Rahe 1967).

The SRE had two sections. The first section was life experiences that were aggregate in nature. Each of these entries was given a specific intrinsic value. The second section was a series of individual life experiences. Each of these life experiences had a value assigned to it but was then multiplied by the number of times that particular event had occurred.

In 1967, Thomas Holmes teamed up with Richard Rahe and began work on a revised and improved, comprehensive stress scale. They developed a list of 43 life events. Holmes and Rahe gave the life event of "Death of a Spouse" a value of 500 "units." This was to serve as a baseline against which other life events could be measured.

Holmes and Rahe then gave this list of 43 life events to a group of study participants. They asked the subjects to rate the other 42 events in relation to "Death of a Spouse." (i.e., if Death of a Spouse was equal to five hundred units of measure, the subject was then able to determine how severe a traffic violation was in relation to the Death of a Spouse event and determine the appropriate number of units to assign.) The subjects all assigned each of the life events a score based on Death of a Spouse being equal to 500.

Holmes and Rahe then took these results and composed a scale of severity. To make the scale more easily manageable, they then calculated the relative values that had been assigned and adjusted all figures to represent a scale from one to a hundred. This allowed them to rank the 43 events in relation to each other and develop a comprehensive, adjusted scale of the 43 events. The end result was that the least

impactful or stressful event was identified as a Minor Violation of the Law and was assigned a value of eleven. The most stressful event was identified as Death of a Spouse and was given a value of 100 (Holmes and Rahe 1967).

Holmes and Rahe now had their scale but they needed to determine its reliability and validity. After a few small scale tests, they believed their scale to be capable of undergoing large scale testing. Rahe undertook the first major test of the newly developed scale. Twenty five hundred sailors were presented with the scale. They were asked to score their stressors based on what they had experienced over the preceding two years. Rahe and his team then tracked these individuals over an eight to twelve month period to determine what correlation or predictive ability the Holmes and Rahe scale would illustrate. Detailed records were kept of all medical issues that arose.

What they found was that there was a correlation of .118 between the aggregate score that an individual scored over the preceding six months and the likelihood that the individual would suffer an illness and require a visit to a physician (Rahe, Mahan, Arthur 1970). This would indicate that the stressors accounted for less than 4 percent of the overall effects. It may appear to be a low number but due to the large population and its consistency over many subsequent studies, it is still significant (Mendels and Weinstein 1972).

They demonstrated that as the score on the scale increased, the likelihood of illness increased. Scores below 150 saw a relatively minor increase in doctor visits. Once the scores reached the level of 150 points however, the likelihood of a visit to a doctor increased to around 50 percent. Individuals that received a cumulative score of over 300

were shown to have a 90 percent greater risk that they would require a visit to a physician or medical clinic.

Psychiatric Epidemiology Research Interview Life Events Scale

The Psychiatric Epidemiology Research Interview Life Events Scale (PERI) has several similarities with Holmes and Rahe's Social Readjustment Scale. It is an inventory style assessment. Like Holmes and Rahe, the PERI developers utilized lists of life events and presented them to raters or "judges" to determine the relative value of each event. Where Holmes and Rahe used "Death of a Spouse" as their modulus, the PERI team utilized "Marriage."

The PERI scale has a total of one hundred and two life events in comparison with Holmes and Rahe's forty three. This was an attempt to make the scale more inclusive by adding more distinct life events. The larger the pool of inventory items, the more specific the potential responses could be.

Not only were the PERI events more numerous, but they also attempted to make a distinction between events that they deemed were more universal experiences and those that were considered more cultural in nature. For example, universal experiences are those things such as marriages, births, death of parents, which most people will experience at some point in their lives regardless of their social position or cultural background. Cultural life events would be such things as a Catholic christening, a Jewish bar mitzvah, or an Amish barn raising.

There was one additional measurement that the PERI used that was not represented on the Holmes and Rahe scale. PERI created three classes of events. They

differentiated between events that were connected to psychological health, those items that were connected to physical health, and those that were independent of either the psychological or physical dimension (Dohrenwend et al. 1978b).

By dividing their scale up according to these criteria, they attempted to create a more finely tuned diagnostic tool. This is evidenced by its wide use in many different spectrums and a significant correlation of .30 when compared with subsequent health issues and physician visits (Scheller-Gilkey et al. 2002).

Perceived Stress Scale

The Perceived Stress Scale (PSS) is one of the more commonly used stress scales. The PSS was developed in the early eighties by Sheldon Cohen (Cohen, Kamarck, and Mermelstein 1983). The style of the PSS is very dissimilar to that of the PERI or the Holmes and Rahe Scale. The PSS is much shorter than either of the other scales. It has only ten questions as opposed to Holmes and Rahe's forty three or the PERI's one hundred and two. The PSS also has a much shorter focus than the other scales. It is primarily interested in a rolling one month assessment. Most importantly, however, the PSS does not assign universal values to a particular event. It asks the individual person how they feel about each specific event.

For example, the Holmes and Rahe or the PERI scales might assign a value of X to an event such as failing an exam. Anyone who had failed an exam would have a value of X added to their overall stress score. It did not matter how the individual perceived the test failure. All failures would receive that same value of X on their score.

The PSS has no preset values. The failure of a test could be a catastrophic event for someone that was used to success and whose entire life was academically focused.

For someone who did not care whether or not they passed and who had little interest in their academic standing, the impact might be minimal.

The PSS focuses more on individual reactions to an event. It is a self-reporting instrument. Six of the ten questions ask the respondent how they “feel.” It does not rely on external judges or raters to determine how severe an impact should be. Because of that, the PSS has less predictive capabilities than the other scales. A third party could conceivably fill out a PERI or a Holmes and Rahe scale by simply knowing what events had happened to an individual. Based on the answers, the third party could then predict a general level of stress for the individual. The PSS is not like that. A third party may know what happened to an individual but they would not be able to answer for how the person perceived those events. They would not know how it made the person feel and therefore would not be able to make any predictive assessment.

There is one crucial point however, where the PSS concurs with the other scales. Once a PSS score has been obtained, that score is a strong indicator of future health issues. A high level of perceived stress is heavily correlated with a greater risk for physical or psychological illness. Like the PERI scale, this correlation can be as high as .30 although due to its more subjective nature, this correlation is not as reliable as some of the other scales (Andreou et al. 2011).

Global Assessment Tool

The Global Assessment Tool (GAT) is one of the more recent entries into the panoply of assessment tools designed to measure stress. It was first introduced in 2010. It has many similarities with the other survey style of questionnaires. It has a total of 240 questions. These questions are intended to be divided into four different categories that

give an indicator of Comprehensive Soldier Fitness (CSF) (Cornum, Matthews, and Seligman 2011).

The GAT is unique among the other scales in that it was designed specifically for the Army. It was the result of a reaction from the Army to reports of increased incidents of Post Traumatic Stress Disorder diagnoses and incidents among soldiers returning from multiple deployments. The intention was to identify at risk soldiers and allow for targeted resiliency training to bolster those areas in which a particular soldier might be weak (Carey 2009).

The GAT is designed to identify high stress levels but it is part of a larger program of CSF designed to prevent negative side-effects of increased stress. Although this is not the same as a predictive measure, it is a proactive step in the right direction. Since this is such a new tool however, its reliability and efficacy remain to be seen.

Scalability Summary

The most important conclusion that can be drawn from this first portion of the literature review is that scales do exist. Not only do the scales exist but there is a large body of evidence supporting the position that these scales are valid and reliable.

Currently only two of the scales have any studies that demonstrate a correlation between their respective scores. Higher scores on the Holmes and Rahe scale have been shown to have a correlation of .82 to an increase in scores on the PERI scale (Davidson et al. 1997). Although there is not a direct linkage that equates a rise in one scale to a specific “degree” of increase on the other scale, the “direction” of the linkage is fairly certain.

Predictability

Since all four of the scales that we have addressed so far have demonstrated reliability and validity, each one has the potential for at least some degree of predictability. We can accurately say that the occurrence of a stressful event will result in a score on each of these scales. The greater number of events that occur, the greater the score will be. This then provides a general level of predictability in that greater degrees and occurrences of stressful events will result in higher scores on all four scales (Cohen, Kamarck, and Mermelstein 1983).

Two of the studies however, the GAT and the PSS, are approached primarily as reporting tools. Although we can predict a relative score on these scales, there is no implied predictive capacity that would relate an outcome to those increased scores. Although there have been theories advanced regarding their ability to provide a predictive capacity, the literature does not currently support using either of these tools at this time as predictive tools (Defense Science Board 2012).

The PERI scale has a rather large degree of correlational studies and therefore a relevant degree of predictability. The primary focus of these studies however, relate to mental disorders. There are many studies that demonstrate a linkage between a range of scores on the PERI scale and the subsequent likelihood that an individual will exhibit symptoms of substance abuse, depression, suicidal ideation, etc. These linkages can be very complex however, as is often the case when dealing with multiple diagnoses of mental conditions and can lead to questions of primacy and causality (Harkness et al. 1999).

The fine line that must be acknowledged in these studies, however, is that they do not predict, so much as they serve to identify a concurrent but previously unknown problem. For example, a person who achieves a high score on the PERI is more likely to have substance abuse problems. The studies do not demonstrate that the high PERI score predicts that “in the future” the individual will “develop” substance abuse problems. It merely identifies that a high PERI score indicates a greater likelihood that the condition may *already exist*. The PERI may be a highly useful tool in determining what additional diagnostic tests need to be given but we would hesitate to implement it as a stand-alone tool.

The focus then for a predictive relevance is the Holmes and Rahe scale. As was stated in the first section of the literature review, the initial Holmes and Rahe study was retrospective in nature. What they wanted to determine, however, was exactly what we are trying to identify today. They wanted to determine if there was a predictive ability in their scale.

In 1970, a second study was conducted. Twenty five hundred sailors were given the scale and asked to rate themselves according to the life events that had occurred to them over the last six months. The scores were calculated. These sailors were then tracked over the next six months. Their medical visits were tracked and recorded. The same .118 correlation was found in the 1970 study that had been found in the earlier study (Rahe, Mahan, and Arthur 1970). This not only validated the previous study but clearly demonstrated that scale could be used as a predictive tool.

Holmes and Rahe’s work revealed that there was a correlation between the aggregate score that an individual scored in a 12 month period and the likelihood that the

individual would suffer an illness and require a visit to a physician. Scores of below one hundred and fifty indicated only a slight risk of illness. Once the scores rose above one hundred and fifty, the likelihood of the individual seeking medical assistance began increasing to around 50 percent. As the scores increased to over three hundred, the likelihood of the individual seeking medical attention saw a corresponding increase. Scores of over three hundred resulted in a 90 percent probability that the individual would seek medical care.

Relevance

These psychological tools are also corroborated by the medical community. There are many studies that can be accessed that demonstrate a direct, causal link between stress and any number of physical illnesses. High levels of stress have been shown to increase the risk of heart attacks even in patients with otherwise generally healthy habits. Stress is commonly understood to be a leading contributor to weight gain which leads to many other compounding health issues. It has been linked to diabetes, loss of bone density, poor dental health, and even baldness. The evidence is overwhelming.

The Mayo Clinic has been the source of many of these reports (Mayo Clinic 2010). A report by the Mayo clinic staff mirrored the earlier health results that were found in the American Psychological Association's "Stress in America" report (American Psychological Association 2010). These supporting studies found that physically stress can lead to head aches, to include migraines, chest pains, muscle pains, and general, non-specified pains. It can lead to muscle tension and hypertension. Stress can cause stomach aches, constipation, diarrhea, and other digestive issues. It can decrease the sex drive. It

can cause fatigue and general malaise. It can disrupt sleep patterns, which only serves to amplify the other effects.

A common reaction to stress is the release of hormones into the body (Henry 1993). The type of hormone that is released is related to the type of reaction that the stress initiates. We commonly refer to three different stress responses; fight, flight, and defeat. The fight mechanism is engaged when our body prepares to combat the source of the stress. The flight mechanism is a fleeing reaction. The defeat mechanism is a response that occurs when a body decides that fight or flight is useless and it simply decides to give up.

Stress that puts the body into the “fight” mode generally leads to the release of the hormone norepinephrine. Flight inducing stress causes the release of epinephrine. In short bursts, these hormones can be both healthy and advantageous. They allow us to maximize our efforts to achieve a short term goal.

The problem arises when this becomes not a short term solution but a long term condition. The body is not designed to continually release and process these fight or flight hormones. Prolonged exposure to such stress will almost inevitably lead to the “defeat” mechanism being initiated and the over-production of cortisol (Rosmond, Dallman, and Bjorntorp 1998). Constant high levels of cortisol can lead to weight gain, a decreased rate of cell regeneration, and a compromised immune system (Segerstrom and Miller 2004).

An additional study was conducted by the Ohio State University College of Medicine (Kliecolt-Glaser et al. 1983). Cortisol levels in patients’ urine were compared to scores obtained on the PERI scale as well as two others. It was found that cortisol

levels in patients who scored above average on the loneliness and depression dimensions of the scales had greatly increased levels of cortisol. This study further illustrates the connection between emotional stress and physical health.

It seems almost unnecessary to list these studies and provide evidence of the negative physical impacts of stress. It makes such intuitive sense that we accept this on an almost instinctual level. It appears as obvious as stating that being struck by a car will have a negative effect on the individual's immediate medical outlook.

We know that stress is bad. Increased or prolonged exposure to stress can simply not have anything but a negative outcome. Is it necessary to restate it here? Yes. It is necessary so that we can quantify what we intuitively know. It places a metric on what was previously only subjective knowledge, regardless of whether it was right or wrong. It also allows us to speak in terms of common reference points so that our understanding of the issue and further discussions stay grounded in fact.

Challenges to the Literature

We have presented four scales and demonstrated how they help to answer the problem of measuring stress in the Army lifestyle. These scales and the associated studies are not without their critics however. In order to properly present these theories we must examine and address those arguments that may run counter to what we have currently presented. Only by examining the detractors and critics can we be certain that our conclusion is valid.

Problems with Holmes and Rahe

There are some concerns that have been voiced with the methods and applicability of Holmes and Rahe's work. It is necessary to address those issues before we can determine if we can clearly use their work as a basis upon which to draw our conclusions.

Perhaps the biggest criticism of the Holmes and Rahe Stress Scale is the lack of individual context. "Divorce" is rated on the Holmes and Rahe Scale as having a value of seventy-three. Although many people would categorize divorce as a negative event, the argument can be made that divorce might actually be a stress reducer. If a person found themselves in an abusive relationship, a release from that relationship might reduce their overall level of stress.

The answer to such arguments is that Holmes and Rahe did not attempt to classify their events as being positive or negative. Stress does not always have to be a negative thing. Positive events can bring stress into our lives just as quickly as negative events. The important thing to Holmes and Rahe was the degree of change. The direction of that change, for the positive or the negative was irrelevant to them.

Another reply that can be made to the lack of individualization is that although there are always going to be specific incidents where the predictability falls apart because it does not take into account the individual's ability to adjust, given the large numbers utilized, the study is generally credible. Across a population it has a reliability that is more relevant than trying to make it reliable to each individual within that population.

There have been attempts to address the individualization issue. One such attempt was made by Brown and Harris in 1978. They developed the Life Events and Difficulties Schedule (Brown and Harris 1978). This was an effort to put context around each event.

Instead of simply giving an event such as “Divorce” a universal value, they developed an extensive interview method to allow much more input from the individual. They then took the additional data and processed it through outside raters to determine a more unique value. This method might provide a bit more depth, but the amount of work required to process the data is problematic. Additionally, although there is more attention given to the individual event, it is vulnerable to the subjective, non-metric input of the outside raters.

Another theory that gives more emphasis to the individual is the diathesis-stress model. This model was developed based on the principle that an individual has a predisposition to act negatively or positively toward stress. This model utilizes the term resilience which is a principle that the military has recently sought to embrace. Its focus is more on the individual person and less on the individual event.

The idea is that a well-adjusted individual has a greater ability to resist the negative effects of stress. As it relates to the Holmes and Rahe model, a well adjusted individual that had a score of three hundred might not have a greater predisposition to illness. The 90 percent probability that the individual would seek medical care during that twelve month period might not hold true.

Although the diathesis-stress model certainly has its merits, it does not discredit the Holmes and Rahe assertions. Those resilient individuals are actually already accounted for in the population. The studies were not selected for people that possessed high levels of stress. The studies were across an entire population. The population already contained individuals with high degrees of resilience and low degrees of resilience. Those

with high resilience would be accounted for in that 10 percent with stress scores above three hundred that did not need medical care.

Finally, the question has been raised as to the relevance of research that is fifty years old. The original work of Holmes and Rahe was conducted in the 1960s. It generated much interest and many corroborating studies were conducted in the next five years (Mendels and Weinstein 1972). As the concepts presented by Holmes and Rahe became more accepted, interest shifted, however. New fields of study drew more attention. Biometric measures of stress gained more popularity than scaled measurements.

This certainly does not mean though that Holmes and Rahe were no longer relevant. Although not as popular, studies regarding their theories continued to be conducted. As recently as 2001, a major project was undertaken to determine if there were a generational change in the stressor scale presented by Holmes and Rahe (Spurgeon, Jackson, and Beach 2001).

This study did bring up some interesting points. Some of the stressors on the Holmes and Rahe scale were determined to have changed precedence. Although Death of a Spouse was still determined to be the number one stressor, overall, financial stressors had moved much higher on the list. This change in precedence does not, however, undermine the overall relevance of the concept of the scale. Although the Spurgeon study may have demonstrated a change in the particulars, it clearly showed that the scale still held a correlation to stress induced illness.

Problems with PERI

With all of the advantages that this expansive scale brings, there are also some questions that need to be raised. The initial PERI study was done with a relatively small number of event “judges.” They had fewer than one hundred of these raters who properly filled out the rating charts. The small sample size alone raises some questions as to how applicable their opinions are.

There is also a problem with the administration of the initial study. There were one hundred and twenty four subjects. Of these one hundred and twenty four, thirty-two of the results were thrown out due to subjects filling out the survey incorrectly. It can be assumed that if that large of a group was disqualified from a study, perhaps the instructions for the study were unclear.

The regional affiliation of the test subjects is also a matter of concern. All of the test subjects came from New York City. It is unlikely that these subjects would hold the same opinion regarding the severity of some events as would a person from Los Angeles or someone from Kansas City. Therefore it is likely that there is a northeast urban bias to the scale.

Finally, the PERI developers did not replicate their study. They did not test it for validity a second time, even within their own narrowly framed subject base. Time itself could be a confounding issue as easily as could the sample size or regional affiliation.

This is not to imply that the PERI has not received additional testing from other sources. Although the original study might have been subjected to certain biases, the theory has been tested against many other backdrops and has proved to be fairly reliable.

Of specific relevance to our field of research is the study conducted in 1981 in Israel (Levav, Krasnoff, and Dohrenwend 1981). This study adapted the PERI scale to those individuals who had experienced stress during the Israeli-Palestinian conflict. These results showed that the original premise that was presented by the originators of the PERI scale were valid and reliable across time, culture, and situation.

Problems with the PSS

The primary problem with the PSS is identical to its strength. It is its individualized focus. The PSS is a very subjective tool. It does not simply ask “Did event A occur?” It asks “How did you feel when event A occurred?” It is the difference between judging a painting based on its points of congruence with the actual image being represented or by asking people to look at the painting and judging it based on whether or not they liked it.

The easiest way to counter this issue is through recognition of the issue up front. As long as we are aware of the interpretive nature of the data, we can guard against attaching too much significance to any single report. Conversely though, when subjective data begins to gain relevance through repeated individual reports, we must be prepared to give those non-metric results adequate attention.

Problems with the GAT

There are three large challenges that have been addressed regarding the GAT. The first is its relative newness. The second is the population to which it is applied. The final issue is the potential for reporting biases based on bureaucratic influence.

The GAT was only introduced to the military in 2009. Much of the focus on the GAT development was the result of the Army hitting a suicide rate that had been unprecedented in the previous three decades. Army officials reacted to this statistic by seeking a program that would help to mitigate this trend (Cornum, Matthew, and Seligman 2011). This program was initiated in 2008, and by 2009 the initial GAT was complete. This obviously did not allow time for extensive trials and testing.

The second challenge is this. The GAT is a tool that is part of the overall Comprehensive Soldier Fitness (CSF) program. One of the primary researchers behind the development of the CSF program originally had focused his research on school age children and youth with identified problems. Although Dr. Seligman, as well as the many others who worked on this concept, is highly regarded, many wonder how applicable a body of work designed for a distinctly different population would be when applied to Army personnel. There was no basis in the developer's previous work that would lead someone to believe that the work could be transferrable without extensive analogous adjustments being made. These adjustments may then cause any existing validity to be lost. Although the GAT is only one element of this program, it is still a concern that must be addressed.

Finally, although the limited number of reports of this short-termed tool seems promising, a recent study has brought to light potential biases in the reporting of results (Roy 2013). The question has been raised that since the Army is an outcomes based organization and not a non-biased research institution, those charged with implementing the GAT and the related Comprehensive Soldier Fitness program have a vested interest in

reporting it as a success. Reporting anything other than success could in fact lead some individuals to receive less than favorable performance reviews.

Additional Studies

There are many other researchers that have addressed the issue of stress and its ability to predict negative consequences. The almost universal conclusion is that high levels of stress correlate to greater degrees of illnesses, more biological signs of aging, slower healing times, greater degree of depression and other mental illnesses, decreased immune systems, and even a greater propensity for violent outbursts.

For additional sources, we would recommend articles on the Cerny Smith Assessment. This assessment is a scaled interview that focuses on identifying individuals with a greater propensity for adaptation in foreign environment. This can be directly relevant to service members. The Stress in America Survey conducted by the American Psychological Association is another interesting source. It takes a generational approach to the topic. The results show a link between stress and the age group between 18 and 33. This age group makes up the majority of our current Army population. Articles on the Depression–Anxiety Stress Scale and the Life Events and Difficulties Schedule are also useful in understanding the problem.

For issues that relate directly to the military, there are additional articles by Dohrenwend (Dohrenwend et al. 1978a) that attempt to take a more qualitative approach to the issue. The issue of combat was dealt with specifically by Southwick’s team in 1997 (Southwick, Morgan, Nicolau, and Charney 1997). The body of work on combat stress in general has seen great strides over the last 12 years. Unfortunately, much of this comes in the way of catch up research. The problems created by the current combat situation have

necessitated a dramatic increase in the studies in this field. Nevertheless, that is not the direction of our focus. The effects of combat stress in and of itself are a separate topic. We are, however, greatly interested in limiting the pre-combat stressors so as to decrease the effect of combat itself.

CHAPTER 3

METHODOLOGY

Introduction

Does the Army lifestyle generate stressors that can be accurately measured and predicted? That is the question that we are attempting to answer. We have examined four scales of stress that have been shown to have a large degree of validity and reliability. We have discussed the strengths of these scales and the challenges that have been raised.

We have introduced the medically proven link between stress and physical and mental health. It is as close to a fact as we can make it. Stress causes illness. Higher levels of stress lead to an increased risk of illness. Looking across all of the domains that these scales include, it seems that although they may not be 100 percent accurate, they present a compelling argument that they are at least on the right track. How then can we utilize the literature presented to approach our study?

Method

A period of service in the Army can be anywhere from three years to thirty years depending on what field an individual enters, what rank they obtain, and the individuals personal motivation to remain in. During that time span a soldier will be sent to military bases, assigned duty positions, and receive training. They will also likely receive promotions and awards and possibly even demotions and punishments. Their leaders will change, their organization will likely change, and their peers and subordinates will change. The degree of change and the number of moves and promotions and assignments are a function of how long a soldier stays in the service.

For the sake of this study, I will examine a typical six year period for an officer. We could examine any rank and any amount of time for the study. We could look at 20 years for a senior enlisted soldier, 30 years for an officer, 4 years for a junior enlisted person, and 12 years for a warrant officer. The potential combinations and permutations however, make examining every option impossible. There are enough similarities between most circumstances and ranks that this period that we propose should be sufficient.

We will look at those events that are mandated by Army regulation that occur to a soldier during those six years. We will also discuss those things that are not mandated by regulation but are expected by the Army culture. We will not introduce any extreme situations. As stated in our delimitation, we will not be addressing combat. We will only look at those things that are routine and systemic to the Army organization.

As we go through each of the six years of the soldier's life, we will score the routine events on the Holmes and Rahe scale. We will then examine the scores, year by year, to determine if they present a significant, predictable risk.

The First Six Years

A military officer can begin his career through many different avenues but typically they enter service through one of three commissioning sources; Reserve Officer Training Corps (ROTC), Officer Candidate School (OCS), or the United States Military Academy (USMA). Each of these sources has its own stressors and its own challenges but the end result is a commissioned second lieutenant. We will look at the second lieutenant from his commissioning onward.

Upon completion of ROTC, OCS, or USMA, a second lieutenant is usually sent first to an Officer Basic Course (OBC) that focuses more narrowly on their particular branch. This OBC varies in length from three months to as many as eight months. For the sake of the example, we will use six months as the average.

Following OBC, the second lieutenant is then sent to their first assignment. Typically this first assignment is a platoon leader position or a company staff position. They will hold this position for one to two years at which time they will be promoted to first lieutenant. With promotion comes a change in position and responsibilities. This is also often accompanied by a Permanent Change of Station (PCS), which requires the new lieutenant to move to a new geographic location.

Following this latest change, the first lieutenant will then take an Executive Officer (XO) position or another company level position for another year or two. After this period the officer will usually receive a promotion to captain. Upon promotion to captain, the officer is typically sent to the Captain's Career Course (CCC.) This, like the OBC, is also about six months long. Following CCC, the goal is to get a company command. It is possible to get a company command right out of CCC, but it is more common for the new captain to serve a year in a staff position prior to receiving their command.

This covers the first six years of the officer's life. To recap then; move, school for six months, move again, take a new position, take a second position, move again, start another job, move again, attend school for six months, move again, take a staff job, move again, take command. Let us look at these events and see what types of scores are achieved on our scale.

Year One

In year one, the officer moves to the OBC location, attends school for six months, moves a second time, and starts a new job. Holmes and Rahe would score it as follows:

1. Graduation from ROTC, OCS, or USMA;

Outstanding personal achievement—28 points

2. Moving to OBC;

Change to line of work—36 points

Start/stop school—26 points

Change in residence—20 points

Change in working hours or conditions—20 points

3. Graduation from OBC;

Outstanding personal achievement—28 points

4. Moving to first assignment;

Change to line of work—36 points

Start/stop school—26 points

Change in residence—20 points

Change in working hours or conditions—20 points.

The total then on the Holmes and Rahe scale from an outside, objective point of view would be 260. That is simply the score for those things that have to happen. There are several other events that are likely to happen. It is highly probable that the new second lieutenant will experience a change in personal habits (24 points), a change in recreation or social activities (19 and 18 points respectively), change in financial state (38 points),

and if they are married, likely a change in work for their spouse (26 points) and a separation from their spouse for school (65 points).

These additional stressors that are likely to occur bring the total for our new second lieutenant to 432. Since the predictive results for the Holmes and Rahe Scale indicate that a score of over 300 results in a 90 percent greater risk that a significant illness or a hospital visit may occur, there is an increased probability that our second lieutenant will wind up in a medical facility at some point during his first year.

Year Two

In their second year, a second lieutenant will likely change positions one time. This will require:

1. Change in job responsibilities—29 points
2. Change in working hours or conditions—20 points.

There are many other stressors that are likely to occur during this time. The intent is not to point out every single stressor that occurs though. Holmes and Rahe list Christmas as a stressor but that is an event that will occur regardless of Army policy. There will also be stressors that occur that Holmes and Rahe do not address. These will not be helpful to us because we would have no way of reliably placing them on the Holmes and Rahe Scale without large amounts of original research being conducted to determine the additional stressors validity. These two stressors that we have listed for year two however are clearly defined by Holmes and Rahe. They also are the two that can be most clearly linked to the requirements of the Army. They are stressors that are the result of the systemic functions of the organization and are within the Army's ability to control.

Year Three

The following year there are many new changes that the second lieutenant will face. First of all, he will likely be a second lieutenant no longer. An officer is typically promoted from second lieutenant to first lieutenant after two years. This may vary by a few months but that is the general time frame. Two years is what the Army refers to as the “primary zone” for promotion to first lieutenant. It is possible that they may be promoted after the two year period, but that is considered “above the zone” and is certainly not desirable. Missing a primary zone promotion adds an entirely different series of stressors to the individual. Since two years is the norm, we will use that as our example with the awareness that there may be outliers to this scenario.

The new first lieutenant has now been at the same duty station for two years. The Army’s usual rotational cycle is two to three years (Department of the Army 2010). This is the point at which the Army has determined that an officer should move from one base to another. The goal of the Army is to keep a soldier in one location for three years. Although moves after only one year on station are not uncommon and some individuals are able to remain at the same base for five or six years, these are not the traditional situations. The average is every two to three years. For the sake of this example, we will go with the more accepted goal of three years.

Since the promotion will also come with a change in jobs, the first Permanent Change of Station usually takes place at about this time. So for year three we have:

1. Promotion;

Change in financial state—38 points

Change in responsibilities at work—29 points

Outstanding personal achievement—28 points

2. Move;

Change in residence—20 points

Change in working hours or conditions—20 points.

This is a total of 135. That is at a minimum. As we observed before, there are many other likely changes that will occur depending on whether the soldier is married, has kids, the spouse works or goes to school, etc. These additional changes would amount to anywhere from 50 to 77 points which would bring the total to 185 to 212. This places the soldier at a risk level that is just below the 150 threshold and possibly pushing the 200 mark.

Year Four

Year four is similar to year two. The only likely major change will be a change in job.

1. Change in job responsibilities—29.

2. Change in working hours or conditions—20.

Forty nine points then for year four.

Year Five

Year five is going to be another hectic year. The first lieutenant will usually get promoted at the end of year four or the beginning of year five. This is also the point where a soldier winds up either changing jobs again or going to the next level of education in the Army education system. This education level will require the soldier to move twice; once to the location of the school and once when school is complete to their new assignment. For year five then:

1. Promotion;

Change in financial state—38 points

Change in responsibilities—29 points

Outstanding personal achievement—28 points

2. Move;

Change in residence—20 points

Change in working hours or conditions—20 points

Start/stop school—26 points

3. Graduation and reassignment;

Change in residence—20 points

Change in working hours or conditions—20 points

Start/stop school—26 points.

That brings our total for year five to 227 points. With another 51 points, to 142 points likely if they are married, this puts the soldier above the 50 percent threshold for increased risk of illness or negative effect and likely well over the 300 score that Holmes and Rahe indicate have the highest probability of illness or negative condition.

Year Six

The last year of our example, the soldier is likely to experience one more job change. They are also likely to be looking for their first command as a captain. There is stress involved in seeking a command, being denied a command, or actually getting a command. If the captain actually gets a command it will often incur yet another move.

1. Job change:

Change in responsibilities at work—29 points

Change in working hours or conditions—20 points.

That is a minimum of 49 points.

2. If the captain gets a command:

Outstanding personal achievement—28 points

Change in residence—20 points.

That brings the total to 97 points. With the likely addition of the usual 51 to 77 points that accompanies the move, that would make the overall score somewhere between 148 points to 174 points. Easily at or above the threshold for a 50 percent increase in the probability of illness or negative consequences.

The table 1 is based on the data calculated above.

Table 1. Six Year Chart

	Minimum stress score	With likely additions
Year One	260	432
Year Two	49	49
Year Three	135	212
Year Four	49	49
Year Five	227	371
Year Six	97	177

Source: Created by author.

It is important to remember that this is just for those events that are a direct result of the Army lifestyle. This is not taking any other life factors into account. This table shows those four out of six years, the soldier is above the 50 percent threshold for risk of adverse effects and two of the four years they are above the risk of a potential catastrophic event.

This next graph illustrates these numbers against the numbers that Holmes and Rahe associated with those measures of 50 percent likelihood of illness or adverse effect and 90 percent likelihood.

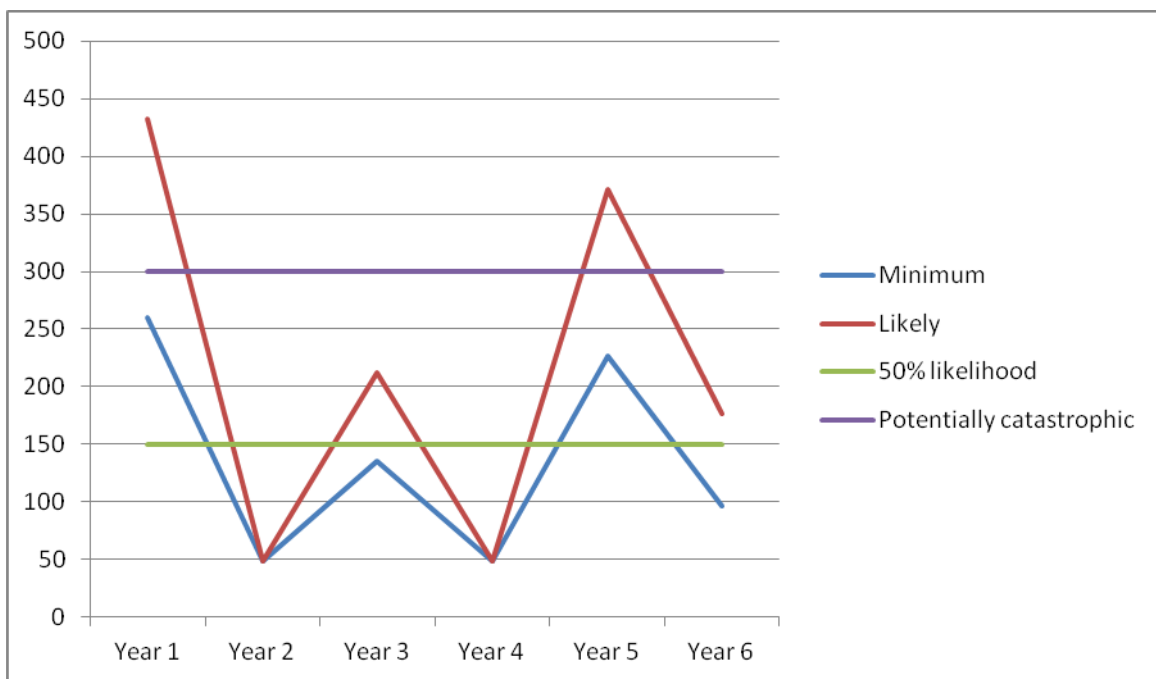


Figure 1. Six Year Stress Graph

Source: Created by author.

These numbers clearly illustrate the risk factor. Just by being a member of the military, your risk level will follow this general pattern. As stated previously, we could have utilized any time period to illustrate the point. The pattern holds generally true across a twenty year career. This pattern also holds true for both officers and enlisted. Although not identical to officers, enlisted soldiers also follow a pattern of schools, promotion, and job change.

We would also point out that we are not including combat deployments in our calculations. Over a six year period, a soldier can expect to be deployed two or three times. We did not include expected combat deployment stressors because we wanted to avoid any confusion that these scores were only the result of the current combat tempo.

For the sake of comparison though, let's look at the stressor scores that would occur just from one standard combat deployment:

Change in responsibilities at work—29 points.

Change in living conditions—25 points.

Revision of personal habits—24 points.

Change in working hours or conditions—20 points.

Change in residence—20 points.

Change in recreation—19 points.

Change in social activities—18 points.

Change in sleeping habits—16 points.

Change in eating habits—15 points.

That brings a total stressor value for a deployment to one hundred and eighty six points.

That is at a minimum. If the soldier is married, if the soldier gets injured, if the soldier

knows someone that gets injured or killed; those numbers jump up to three hundred and forty one points. The deployment alone is enough to put someone at risk of a catastrophic illness or event. When added to the normal lifestyle scores, this would cause the stressor score for a deployment to range from three hundred and ninety points in years two or four and soar above seven hundred and fifty in years one or five. This is well beyond twice what the level of Holmes and Rahe's highest identified risk is.

It is important to stress once again that all of these stressors are the result of those things that are systemic to the Army lifestyle. These are routine events and therefore predictable. Nowhere in these numbers have we added such stressors as personal illnesses, marriages, divorces, death of a family member, major purchases, traffic violations, or even vacations or holidays. These will all be occurring along with the rest of the stressors just as they do in everyone's life.

The point is that most people do not constantly live under such a dramatically inflated level of stress. Events such as seeing someone die or needing to kill another person or being almost killed yourself is not a common occurrence. Outside of certain professions such as police or firefighters, it is unlikely that these are stressors that most civilians will commonly experience.

For the general, non-traumatized population there is a degree of space between their average functioning level of stress and the level that will put them at risk. There is a buffer space. There is breathing room. They can experience a speeding ticket or a fight with their spouse or a bounced check without pushing them toward the threshold of increased risk of illness or possible outbursts.

In the Army, there is no buffer space. The soldier is operating at the stress ceiling and beyond four years out of a six year cycle.

Another factor that is not taken into consideration is the likelihood of residual impact. If the stress in year six is over three hundred but then in year seven it drops down to fifty, are we to assume that the impact of the three hundred year is totally gone? There is data to support that stressors have an impact far beyond the twelve months that Holmes and Rahe propose. The Army itself is currently using a Life Events Scale that looks at a five year span. The degree to which these residual effects are felt is a topic of debate but it must be considered.

CHAPTER 4

ANALYSIS

Introduction

Does the Army lifestyle generate stressors that can be accurately measured and predicted? That is the question that we have presented. We have conducted a review of some of the current literature and we have developed several graphs and models. Now we must determine what it all means.

Current Indicators

Suicide

It is no secret that military suicide rates are at an all-time high. In 2012, there were more deaths from suicide in the Army than there were actual combat deaths (Briggs 2013). The rate has more than doubled in the last ten years.

Intuitively however, we are aware that there must almost certainly be a link between this increase and the initiation of a war that has gone on for over ten years. The degree to which combat and the threat of combat over the last few years has actually had on the suicide rate may be debatable but it is inescapable that there is at least some connection between the two (Furlow 2010). It is difficult to imagine that such an extended and dramatic level of stress would not have a negative impact on those affected.

The problem with making any inferences in the rise in suicide rates during a time of war is that we are trying to identify a systemic problem. Although that systemic problem likely still exists and is perhaps even magnified during war, the effect of that systemic problem can be difficult to isolate from the effects of the conflict. An

examination of the suicide rates during the non-war years is necessary. These numbers should be able to help isolate the impact of the systemic issues and allow us to make an educated extrapolation for those years when the conflict existed.

Even when we look at the rates in those years when the U. S has not been in conflict, however, it is difficult to get the real numbers. The National Institute of Mental Health states that the current suicide rate is about 11.3 per hundred thousand (NIMH 2011). That includes the entire population. It includes those populations that are at a demonstrably higher risk of suicide than the rest of the general population, such as the elderly and the mentally ill.

The current rate of suicide among active duty service members is more than 22 per hundred thousand. That is more than twice the national average.

The Army however, has certain screening procedures that eliminate many of those risk populations. For instance, elderly men over eighty five years old are at the greatest risk of suicide. The military does not allow eighty five year old men to enlist; therefore, they have already reduced the propensity for their population to commit suicide.

Another high risk population is the mentally ill. These individuals are also prevented from enlisting. Mistakes certainly do occur. Some people are allowed into service with pre-existing conditions but in general, this limitation should also further reduce the risk factor for service members.

The resultant screened population then should exhibit a markedly reduced suicide rate from the general population. Eighteen to forty year old men and women with no history of mental illness and at least a high school diploma should have a lower rate of suicide than the national average. The suicide rates for the military, however, is currently

double that of the national average. There is something that is causing this phenomenally high number.

Divorce

The Center for Disease Control currently lists the national divorce rate at about 3.6 per thousand. This number has been slightly but steadily declining over the last ten years. During that same time period, however, the military rate has been slightly but steadily increasing. It began the millennium at just under 3 and has risen now to 3.7 (Burton 2012). It is now greater than the civilian divorce rate and it is still climbing.

As with the issue of suicide, we must be aware of the impact that war and continual deployments has had on families. The separations are a stressor as identified by all of the scales that we have referenced in our study. This by itself increases the divorce risk as separation has been identified by the Army as a contributing factor in military divorces (Miles 2005). Several studies have also indicated that traumatic events such as combat correlate to a higher degree of divorce (Ruger, Wilson, and Waddoup 2002; Baker 2013).

Aside from these issues that have increased in the last twelve years, the Army has also acknowledged that the military “tempo” of moves and separations can contribute to the divorce rate (Miles 2005). These are exactly what we have identified as systemic issues in our study so far.

Additional Domestic Issues

Spousal abuse and domestic violence may also be indicators of increased stress levels. These statistics are even harder to develop reliable comparisons due to the way

that the numbers are tracked. Indications are, however, that the rate of domestic issues in the military is higher than their civilian counterparts (Heyman and Neidig 1999). The National Center for PTSD even asserts in their data that family members of people suffering PTSD are in the highest risk group (Department of Veterans Affairs 2013) PTSD certainly occurs outside of the military venue, but an estimated 20 to 30 percent of its population is affected by PTSD. This puts the military families at greater risk than civilian families.

Suicide rates, divorce, and domestic violence are indicators of a problem. They are not proof. When the numbers are negatively skewed that much though, it should be a cause for further examination. Certainly these numbers are up over the last twelve years that we have been at war. The stressors from the war itself might be a direct cause of many of these issues.

When such traumatic stressors as combat are becoming part of the normal lifecycle of a soldier, however, special care should be given to those stressors that are within our control. Even if every one of these statistics is merely the result of war, that does not remove the impetus for examining the stress that the normal military lifecycle places on a soldier and their family. In fact, it increases the requirement of rigorous vigilance. When faced with chaotic situations beyond our control, those things that we can measure and predict become all the more important.

Contraindications

There are a few notable results that stand out in our analyses that could potentially point to different conclusions or even contradict possible results. The first of these is the potential lack of medical visits as predicted by the charts and graphs presented. The

second is the wave function that is presented in figure 1. The last of these illustrations that we will address is the scores that seemingly contradict common sense and anecdotal input; specifically in regards to a lower stress level being reported during a command tour.

The potential lack of medical visits among those junior officers receiving high scores on the Holmes and Rahe Scale is perhaps the most troublesome. Based on the calculations presented here, over 90 percent of all first year officers are at risk of needing to seek medical attention due to stress related conditions. If we were able to demonstrate that less than half that number actually sought medical care then it might cause a change in our analysis.

We were unable to obtain, however, any definitive answers or numbers as to the percentage of new lieutenants that seek medical care. It might seem that if 90 percent of new lieutenants wound up in a physician's office, it would be apparent simply due to the high volume. The fact is, however, since we do not know what the percentage is; our predictive statements will be limited to our known data. The reliability of those predictive statements will decrease the further we stray from that data set. We can, however, draw some relevant conclusions and inferences. The Holmes and Rahe Scale and the later studies conducted by Rahe can lead us to conclude that it is likely that of that population of new lieutenants that present themselves for medical care, a small but consistent percentage will be linked to stress related issues.

It is possible that the actual number may be close to 90 percent and thereby further support the Holmes and Rahe scale. It is possible that these junior officers actually do incur injuries or illnesses that require medical attention but that a more

proximate cause is apparent and therefore a stress connection is not made. It may even be, as some have suggested, that inherent resiliency, such as age or physical fitness, causes the numbers to be skewed for this particular demographic. Until we are able to access these numbers, however, all of these premises are merely speculation.

The second issue that becomes apparent when looking at the graphs and charts is that there seems to be a “wave” function. A high stress year is followed by a low stress year. This, however, is an artificial construct. It is the result of a fixed twelve month graph. Although it can be viewed as generally accurate, these events do not occur at exact calendar dates.

To be more precise, a rolling twelve month scale could be used. Although this would likely still produce peaks and troughs, it is unlikely that they would be as pronounced. One time period would flow into the next instead of abruptly changing. This fixed scale also does not address the issue of cumulative effect. Even Holmes and Rahe admitted that it was unlikely that all events would have the exact same time function. Some events will have a longer half-life than others. The degree to which there is a cumulative effect should be the subject of future research. The Army’s Comprehensive Fitness Program and the systemic recording of the GAT may help address that particular question.

The third issue that stands out is the apparent contradiction in the sixth year stress figures. As many commanders know, command can be a highly stressful time in a soldier’s Army career. It is likely that the actual stress during this period is higher than indicated. The reason, however, that the score may appear low is that many of those issues that are a part of command are not specifically captured in the Holmes and Rahe

scale. The Holmes and Rahe Scale consists of forty three items. It is not inclusive but is instead aiming for general applicability. There is not an item on the list that would directly correspond to a key control inspection, preparation for a training rotation to the National Training Center, or a Quarterly Training Brief. These are only a few of the many issues that commanders face. It would be possible to draw a general connection from one of these events to an item on the scale but in order to maintain continuity and objectivity; we stuck with only those issues that could be directly tied to the primary scale that we have referenced throughout this study.

The Cost in People and Dollars

There are currently over five hundred thousand active duty service members in the United States Army, with a slightly higher number in the National Guard and Reserves. This number can be rounded down to an even five hundred thousand for the simplification of the calculations that follow. The goal of the Army is to move soldiers once every three years (Army Human Resources Command Representative 2012). We will assume for the sake of these calculations that those responsible for personnel assignments are able to achieve that three year goal as opposed to the less conservative one or two year movement cycles that occur. We will also assume that those moves are balanced and staggered. This means that not all five hundred thousand soldiers are moving every third year. A third would move each year. The result then would be that roughly one hundred and sixty six thousand service members move each year.

If those one hundred and sixty six thousand service members have only the fewest number of stressors possible during their PCS moves, they are likely operating at around

one hundred on the Holmes and Rahe scale. That puts them at about a 25 percent risk of an increase in the probability that they will seek medical care.

Based solely on the organization's systemic stress, arithmetically that would mean that around forty one thousand service members have an elevated risk of seeking medical care simply due to stress that they experience through internally mandated actions. If only half of those at risk wind up seeking medical attention, that would be over twenty thousand service members. A military doctor's visit or sick call visit for a service member can last for hours depending on the complaint presented. For the sake of simplicity, however, let us assume that from the time a service member leaves his place of work, drives to the clinic or hospital, signs in, waits to see the doctor, and then returns to work, only one hour passes. That is almost an unreasonably short time span. We do not want to quibble over a matter of minutes, however. We would rather err on the conservative side just for illustrative purposes. The end result is the important thing. If we can demonstrate an impact then we are willing to stipulate that the impact is likely to be adjusted upwards.

Over twenty thousand service members taking one hour out of their day to seek medical care equals over twenty thousand hours. A work year averages about two thousand hours, figuring a forty hour work week and a fifty two week year with two weeks off for vacation. That one hour off per medical visit equates then to approximately eleven years of lost time each year.

The average pay for soldiers varies across the ranks with generals making over eighteen thousand dollars a month and privates making as little as fifteen hundred dollars a month (Defense Finance and Accounting Services 2013). This is an annual spread of

over two hundred and sixteen thousand for the general and just over eighteen thousand for the private. This makes determining an average salary for a soldier challenging.

Using non-classified Congressional Budget Office (CBO) numbers that list the budget for active duty soldiers at around twenty two billion dollars, we arrive at an average of around forty five thousand dollars a year for the average soldier (CBO 2013). This does not count housing, food, or other special pay and bonuses. This is the base salary.

What is at risk then is this. Eleven years of time lost due to medical visits, times an average of forty five thousand a year, gives us a total of almost four hundred and seventy five thousand dollars a year in lost wages. This is a minimum number. A strictly conservative estimate.

That is only taking into account the Army officers' lost time and financial correlation. That does not begin to discuss the medical and administrative personnel needed to treat these stress associated illnesses. A physician or physician's assistant can expect to see up to ten patients a day. They prefer to keep the number closer to six or eight but we will use ten as our number.

We already determined previously that based on the modest affect demonstrated by Holmes and Rahe, around twenty thousand service members are at an increased risk of the need of being seen in a medical facility at least partly because of stress related symptoms. Assuming a fifty two week year with a five day work week each week and assuming that patients are seen during that five day work week, that would mean that almost eighty physicians or physicians' assistants would be needed to work with just the patients who present stress related issues. Since all physicians and physicians assistants

are officers and since they all receive medical proficiency pay, those eighty physicians would equate to another six million, five hundred and sixty thousand dollars a year.

There are also nurses required. That can be as few as one nurse for every three physicians; a requirement of no less than an additional twenty five medical personnel. Then there are the medical office workers and reception desk personnel. Again, conservatively figuring one additional worker at the desk for every ten physicians, that adds an additional requirement of seven or eight personnel. A rough estimate of the salaries for these additional thirty or more employees would be another million and a half dollars. With the physician's pay and the lost work hours, that would bring the total to over eight and a half million dollars lost annually.

There are still more man hours that are unaccounted for. Lab technicians that process tests, pharmacists and pharmacy technicians that are filling out prescriptions, cleaning crews that have to clean up after these forty thousand stressed out patients each year. Millions of dollars and years of lost labor are potentially at risk.

The impact is not solely lost man hours. Computers needed to process the data, paper supplies, drugs, water. All of these things are difficult to accurately quantify but they must at least be considered. There is also the need to address the issue of the work that these service members are not accomplishing because they are in a doctor's office.

It is important to remember that these results are achieved using the three year rotational model. This is also assuming a minimal stressor score of one hundred based solely on the move itself. If we use a two year rotational model and assume that the events that occur during an average Permanent Change of Station cycle have a greater impact, the numbers increase. The two year rotational model would increase the cost by a

third, bringing the financial total to over eleven million dollars annually. Hypothetically, an increase in the stress score to one hundred and fifty could double the health impact factors and bring about a financial cost over twenty million dollars. As those numbers began approaching the two hundred and fifty level, the costs increase. The potential exists for losing the equivalent of the entire annual output of over two hundred and fifty individuals and tens of millions of dollars every year on the conservative scale. A more aggressive estimate puts the man hours lost by years in the hundreds of years and the financial loss reaching nine figures.

The reason that it is important to be aware of the potential time and economic impact that this may have goes back to the readiness issue. A commander makes his assessments based on projected readiness. Framing his operational planning is his understanding of his resources. Two of the most impactful resources are time and money.

Time is immutable. The commander must be able to know how much time is available to him. The chronological time is easily calculated. Less concrete is the actual working hours that he will have provided to him by the troops in his command. Lost time must be part of his operational calculations and stress-related incidents must be accounted for in his lost time calculations.

Budget can be just as fixed as the time factor. A commander is given a budget and he must determine how to achieve his mission within those financial constraints. It is unlikely at lower levels of command that such issues as professional pay for Army physicians will be an issue. As the organizational level increases, however, it becomes more and more likely that these figures will become relevant. When it reaches the Army wide level, these impacts are inescapable and must be taken into consideration.

The illness factor is only the tip of the iceberg. Some studies have shown that illness is not the only risk for individuals suffering from an increased stress level. The even more catastrophic potential exists for a mental breakdown and a “blow up” to occur. This “blow up” could be something as relatively simple as property destruction to the more severe situations of domestic abuse to the truly horrifying events such as the Staff Sergeant Robert Bales incident. In March of 2012, Staff Sergeant Bales left his post in Afghanistan and allegedly murdered seventeen innocent Afghan civilians. Monetary figures cannot be placed on the loss of life and the loss of trust that incidents like this cause.

The signs are there. Holmes and Rahe, and many others, have painted those signs for us. They have said “Do not exceed these limits or bad things will happen.” We just fail to observe the signs.

CHAPTER 5

DISCUSSIONS, RECOMMENDATIONS, AND CONCLUSIONS

Introduction

Does the Army lifestyle generate stressors that can be accurately measured and predicted?

That is the question that we presented at the beginning of this study. The answer seems to be a conclusive “yes.” Studies clearly demonstrate that stressors can be identified. Four scales have been presented that possess both the validity and the reliability to measure the impact of these stressors. Two of these studies have demonstrated clear predictive capabilities. An analysis of the potential impacts of these stressors clearly demonstrates the practicality of implementing measures to address this issue.

Discussion

As was discussed in the opening chapter, the Army relies on many different methods to predict a readiness rating. Generators are monitored for the number of hours that they are run. Maintenance tables exist that provide a commander with a metrically quantifiable ability to know when a generator needs to be serviced or replaced. Oil samples are taken from humvees and provide visibility on engine wear and just how likely a particular vehicle is to last through a given time period.

Usage rates are calculated for everything from food to toilet paper. Supply tables allow commanders the ability to predict when any particular item is likely to be running low. Personnel records track medical issues and PCS moves so that a commander has a

fairly accurate measure of how many soldiers he will have physically present at any given time.

One of the readiness factors that we have previously been unable to predict is how many soldiers will be mentally ready. We have left it up to peers and leaders and first-line supervisors to make themselves aware of potentially limiting emotional factors. This has all been a matter of subjectivity, however, and has lacked any realistic tool that has the ability to record or measure this aspect. It seems that the potential for this tool does exist. With the same certainty that we approach any other aspect of readiness, with metric objectivity, we may have the ability now to add mental readiness to Unit Status Reports.

The Army currently has a robust Comprehensive Soldier Fitness (CSF) program. It attempts to measure current levels of stress and provide resiliency training in those areas that are at risk. The GAT, however, has not been extensively tested and lacks the predictive potential of the Holmes and Rahe Scale. It might be possible to integrate the Holmes and Rahe Scale into the existing program.

In addition to integrating the Holmes and Rahe scale into the CSF program, it would be possible to derive predictive tables from Holmes and Rahe scales to provide approximate unit and individual scores for commanders and the Army at large. The scales would be easy to compile. With minimal input from Human Resources Command, it would be possible to expand the six year example used in this study and provide a thirty year scale for both enlisted and officers. Schools and promotion rates could be adjusted not only for rank but for specific branch. These tables could then give a commander a quick reference guide to determine where the greatest potential for issues might arise. It is not a perfect predictive tool but neither are most of the supply and maintenance

programs. They are designed to give general data and averages. These tables would be fully capable of providing the same type of information on the human dimension.

Recommendations

The first recommendation would then be to compile a panel of representatives from each branch and from Human Resources Command as well as select members from the Army's Comprehensive Soldier Fitness Program. Career timelines can be agreed upon by a majority of the members. Based on those numbers, the tables can be created. Once those tables are created, commanders will be able to view an approximate stress score for each of his soldiers the same way that he could view physical fitness scores. These tables would not violate any confidentiality issues since they would be generic. They would not be revealing any personal issues. All they would do is inform the commander that soldier X, at rank X, with X time in service, is likely to have a stress value of X.

Furthermore, commanders could track the sick call hours or medical visits of the soldiers in his command and report those figures to a designated representative at Medical Command or at the CSF Program. Each report would provide additional data to either confirm or contradict the predictability of the scales. These numbers over time would continue to refine the scales and improve readiness accuracy.

If the relevance of the scores proves useful to Army readiness planning, the Army might even consider taking it one step further. It is possible that other correlations may become apparent that would allow the Army to begin examining its systemic functions. If certain factors or lifestyle elements are continually linked to negative outcomes, those

elements might present an opportunity for the Army to reexamine its operations to determine if benefits of certain actions outweigh the costs.

Conclusions

It is easy to look at the medical report of a soldier's broken arm and accept the doctor's assessment that it will be six weeks before the soldier can fully return to duty. There are very few qualms about listing a soldier that has just undergone an appendectomy as non-deployable for two to three weeks. These are things we can see. These are tangible events that we can measure and record and x-ray and touch.

When what is wrong is inside a soldier's head, the response is usually not so accepting. In a New York Times interview, former Army Chief of Staff, General George Casey, Jr., compared addressing emotional issues to hand-holding and voiced a concern that it would be viewed as a sign of weakness by a military culture. "I'm still not sure that our culture is ready to accept this," Casey said (New York Times 2009).

To its credit, the Army has made great strides in accepting mental issues such as PTSD and stress as legitimate concerns. They have implemented many programs to help soldiers who are having problems. As issues such as multiple deployments and residual effects of attacks from roadside bombs are being more openly addressed, we are perhaps at a point where finally the unseen and intangible will be given the credibility that is needed.

A potentially powerful tool to sway the skeptics and gain acceptance among the military culture exists. An objective, metrically valid scale. Tables based on that scale and captured in the official Army field manuals and technical manuals suddenly become

doctrine and are assumed to be sacrosanct. They are more difficult to assail by those who can only believe what they can see.

We owe it to our leaders to provide them with this tool. We owe it to our soldiers to acknowledge this dimension of their lives. We owe it to our nation as the conservators of their trust and the executors of their defense. It is the right thing to do and the right time to do it.

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